CHARACTERIZATION OF 3D PRINTED PARTS

Zorana Golubovic[1*], Aleksa Milovanovic[2], Aleksandra Mitrovic[3]

[1]University of Belgrade, Faculty of Mechanical Engineering, 11120 Belgrade, Serbia

[2]Innovation Center of Faculty of Mechanical Engineering, 11120 Belgrade, Serbia

[3]The Academy of Applied Technical Studies Belgrade, 11000 Belgrade, Serbia

Corresponding author e-mail: zzgolubovic@mas.bg.ac.rs

Abstract

3D printing as digital fabrication technology became widely popular and used due to its ease in production and customization of any type of design in various fields of industry, medicine, or research. Different printing processes are based on making an object by deposition of material layer by layer, from previously created CAD model. Quality of 3D printed parts is dependent on many parameters such as chemical composition of used materials, printing parameters (infill percentage, infill pattern, building orientation, raster angle,..), thermal behaviour during and after printing processes, aging effect, mechanical properties (static and dynamic analysis), accuracy of printed parts, morphology and topology. With regard to the area of characteristics, which should be examined, different standards, procedures and equipment are employed. In this context, it is challenging task to link various parameters to obtain the best part performances. Given the large number of different possibilities in testing of final 3D printed product, understanding the influential parameters of structure of the material and final part is essential. This paper presents an overview of characterization methods that can be used in order to observe morphology and topology of printed parts.

Keywords

3D printing, quality parameters, characterization.

Acknowledgement

The Ministry of Education, Science and Technological Development of the Republic of Serbia by Contract No. 451-03-68/2022-14/200105 financially supported this research from 4.2.2022.